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APPLICATION TRANSMITTAL LETTER

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Sir:

Enclosed for filing is an ☒ original patent application or, ☐ a continuation-in-part patent application, by inventor(s) Paul A. Revis, entitled METHOD AND APPARATUS FOR FACILITATING SUBSTITUTION OF DIGITAL IMAGES WITH LINE DRAWINGS.

No. of pages in Specification: 24; No. of Claims: 45.

No. of Sheets of Drawings:      Formal: 3,      Informal: 0.

Also enclosed are:

- ☐ a claim for foreign priority under 35 U.S.C. §§ 119 and/or 365 in
- ☐ a separate document ☐ the declaration;
- ☐ a certified copy of the priority document;
- ☐ an Associate Power of Attorney;
- ☐ \_\_\_ verified statement(s) claiming small entity status;
- ☒ a Combined Declaration and Power of Attorney of the inventors(s);
- ☐ a signed Combined Declaration and Power of Attorney of the inventors will follow;
- ☒ an Assignment document and form PTO-1595;
- ☒ a Power of Attorney by Assignee; and
- ☐ Information Disclosure Statement and Form PTO-1449.

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The fee has been calculated as follows:

CLAIMS					
	NO. OF CLAIMS		EXTRA CLAIMS	RATE	FEE
Basic Application Fee					\$690.00
Total Claims	45	MINUS 20 =	25	\$18.00=	\$450.00
Independent Claims	6	MINUS 3 =	3	\$78.00=	\$234.00
If multiple dependent claims are presented, add \$260.00					0
Total Application Fee					\$1374.00
If verified statement claiming small entity status is enclosed, subtract 50% of Total Application Fee					
Add Recording Fee of \$40.00 if Assignment document is enclosed					\$40.00
<b>TOTAL APPLICATION FEE DUE</b>					<b>\$1414.00</b>

- ☒ A check in the amount of \$ 1,414.00 is enclosed.
- ☐ Application fee will follow with missing parts.
- ☒ Please deduct any underpayments or credit any overpayments to Deposit Account Number 50-1003.

Please direct all correspondence concerning the above-identified application to the following address:

A. Richard Park  
 Park & Vaughan LLP  
 508 Second Street, Suite 201  
 Davis, CA 95616  
 (530) 759-1661



**22835**

PATENT TRADEMARK OFFICE

Respectfully submitted,

By

A. Richard Park  
 Registration No. 41,241

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10       **METHOD AND APPARATUS FOR  
FACILITATING SUBSTITUTION OF DIGITAL  
IMAGES WITH LINE DRAWINGS**

**Inventor:** Paul A. Revis

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**BACKGROUND**

**Field of the Invention**

20       The present invention relates to graphical interfaces for computer systems.  
More specifically, the present invention relates to a method and an apparatus for  
facilitating substitution of a graphical image with a line drawing version of the  
graphical image in a graphical display in order to reduce the time required to  
retrieve and display the graphical image.

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**Related Art**

The recent success of the world wide web can largely be attributed to the  
ease with which visitors to web sites can navigate through web pages containing

textual information interspersed with graphical images. Unfortunately, these graphical images are typically stored as large bitmaps that require a great deal of time to transfer across a low-bandwidth modem connection. This creates significant delays in loading web pages, which can greatly annoy visitors to web sites.

In order to remedy this problem, web site designers can reduce the size and number of graphical images that are displayed on a web site. Alternatively, they can do away with graphical images altogether. However, either of these options greatly reduces the visual impact of a web site, and can thereby detract from the experience of navigating through the web site.

Another way to reduce delays in loading web pages is to use a "thumbnail" of a graphical image in place of the graphical image. A thumbnail is a miniature version of the graphical image that can be "clicked on" with a pointing device, such as a mouse, in order to display the larger full graphical image. However, thumbnails are small and difficult to view. They are also smaller than the full graphical image. Consequently, when a thumbnail is expanded, it often displaces textual information or other images in a web page.

Another way to reduce delays in loading web pages is to use a lower resolution version of a graphical image, which requires less time to retrieve across a network. However, a lower resolution version of the graphical image is not as pleasant to view as the original higher resolution version of the graphical image. Furthermore, many details of the graphical image are lost in converting to the lower resolution version.

What is needed is a method and an apparatus that reduces the amount of data that must be retrieved in order to display a graphical image in a web page

without the disadvantages of using a thumbnail or a lower resolution version of the graphical image.

### SUMMARY

5 One embodiment of the present invention provides a system that facilitates substitution of a full bitmap version of a graphical image with a line drawing version of the graphical image in a graphical presentation. The system operates by displaying a page in the graphical presentation, which includes the line drawing version of the graphical image. Next, the system allows a user to input a  
10 command to display the full bitmap version of the graphical image. If the user inputs the command, the system retrieves the full bitmap version of the graphical image, and displays the full bitmap version of the graphical image. Note that displaying the line drawing version of the graphical image requires less data to be retrieved than displaying the full bitmap version of graphical image.  
15 Consequently, loading the line drawing version of the graphical image takes less time than loading the full bitmap version.

In one embodiment of the present invention, the graphical presentation is part of a web site and the page is a web page within the web site.

In one embodiment of the present invention, the user inputs the command  
20 to display the full bitmap version of the graphical image by using a pointing device to move a cursor over the line drawing version of the graphical image, and by depressing a button associated with the pointing device.

In one embodiment of the present invention, the full bitmap version of the graphical image is displayed in another page that contains the full bitmap version  
25 of the graphical image alone.

In one embodiment of the present invention, the full bitmap version of the graphical image is displayed in place of the line drawing version of the graphical image within the page in the graphical presentation.

5 In one embodiment of the present invention, the full bitmap version of the graphical image is retrieved from a remote machine across a network.

One embodiment of the present invention provides a system that facilitates substitution of a full bitmap version of a graphical image with a line drawing version of the graphical image in a graphical presentation. The system receives the full bitmap version of the graphical image, and then produces the line drawing  
10 version of the graphical image from the full bitmap version of the graphical image. Next, the system inserts the line drawing version of the graphical image into a page in the graphical presentation, and then links the full bitmap version of the graphical image into the graphical presentation so that selecting the line drawing version of the graphical image causes the full bitmap version of the  
15 graphical image to be displayed.

In one embodiment of the present invention, producing the line drawing version of the graphical image from the full bitmap version of the graphical image involves displaying a candidate line drawing version of the graphical image to a producer of the graphical presentation. If the candidate line drawing version of  
20 the graphical image is not acceptable, the system allows the producer of the graphical presentation to tune parameters used to generate the line drawing version of the graphical image.

In one embodiment of the present invention, causing the full bitmap version of the graphical image to be displayed includes retrieving the full bitmap  
25 version of the graphical image from a remote machine across a network.

One embodiment of the present invention additionally allows a producer of the graphical presentation to specify a location for the line drawing version of the graphical image within the page in the graphical presentation.

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## BRIEF DESCRIPTION OF THE FIGURES

FIG. 1 illustrates computer systems coupled together by a network in accordance with an embodiment of the present invention.

FIG. 2 is a flow chart illustrating the process of selectively replacing a line drawing version of a graphical image with a full bitmap version of the graphical image in accordance with an embodiment of the present invention.

FIG. 3 is a flow chart illustrating the process of creating a web page in which a line drawing version of a graphical image is selectively replaced with a full bitmap version of the graphical image in accordance with an embodiment of the present invention.

## DETAILED DESCRIPTION

The following description is presented to enable any person skilled in the art to make and use the invention, and is provided in the context of a particular application and its requirements. Various modifications to the disclosed embodiments will be readily apparent to those skilled in the art, and the general principles defined herein may be applied to other embodiments and applications without departing from the spirit and scope of the present invention. Thus, the present invention is not intended to be limited to the embodiments shown, but is to be accorded the widest scope consistent with the principles and features disclosed herein.

The data structures and code described in this detailed description are typically stored on a computer readable storage medium, which may be any device or medium that can store code and/or data for use by a computer system. This includes, but is not limited to, magnetic and optical storage devices such as disk drives, magnetic tape, CDs (compact discs) and DVDs (digital video discs), and computer instruction signals embodied in a transmission medium (with or without a carrier wave upon which the signals are modulated). For example, the transmission medium may include a communications network, such as the Internet.

### **Computer Systems**

FIG. 1 illustrates computer systems 100 and 120 coupled together by network 110 in accordance with an embodiment of the present invention. Computer systems 100 and 120 may include any type of computer system, including, but not limited to, a computer system based on a microprocessor, a mainframe computer, a digital signal processor, a personal organizer, a device controller, and a computational engine within an appliance.

Network 110 can include any type of wire or wireless communication channel capable of coupling together computing nodes. This includes, but is not limited to, a local area network, a wide area network, or a combination of networks. In one embodiment of the present invention, network 110 includes the Internet.

Computer system 100 is a client computer system, which can generally include any node on a network including computational capability and including a mechanism for communicating across the network. Client 100 contains a browser 102. Browser 102 can generally include any type of web browser capable of



viewing a web site, such as the INTERNET EXPLORER™ browser distributed by the Microsoft Corporation of Redmond, Washington. Client 100 also includes a display 104, which can display a web page 105 to a user who is navigating through a web site, such as web site 124.

5           Web page 105 includes a line drawing version 106 of a graphical image. The line drawing version 106 of the graphical image can be created from a full bitmap version 108 of the graphical image using well-known software packages for manipulating graphical images, such as ADOBE PHOTOSHOP™ distributed by the Adobe Systems Corporation of San Jose, California. In general, the line  
10       drawing version 106 of the graphical image includes the outlines of shapes that are present in the original full bitmap version 108 of the graphical image. Furthermore, the line drawing version 106 may include black and white or gray scale values in place of the color values in the original full bitmap version 108 of the graphical image.

15           Computer system 120 is a server computer system, which can generally include any node on a computer network including a mechanism for servicing requests from a client for computational and/or data storage resources. Server 120 includes a web site 124, which comprises a set of inter-linked web pages that a user can navigate through, including web page 105. Web site 124 also includes  
20       the full bitmap versions of line drawings within web pages.

          The data 126 for web site 124 is stored within storage device 122. Storage device 122 can include any type of non-volatile storage device that can be coupled to a computer system. This includes, but is not limited to, magnetic, optical, and magneto-optical storage devices, as well as storage devices based on flash  
25       memory and/or battery-backed up memory.

          During operation, the system illustrated in FIG. 1 operates generally as

follows. A user of browser 102 navigates through web site 124 on server 120. During this navigation process, web page 105 is retrieved from server 120 by browser 102 and is displayed on display 104. If the user clicks on the line drawing version 106 of the graphical image within web page 105, the system  
5 causes the full bitmap version 108 of the graphical image to be retrieved from web site 124 and displayed on display 104. It can either be displayed in place of the line drawing version 106 within web page 105, or alternatively, it can be displayed by itself on a separate web page that contains the full bitmap version 108 of the graphical image.

#### **Process of Selectively Replacing Line Drawing Version of Graphical Image**

FIG. 2 is a flow chart illustrating the process of selectively replacing a line drawing version of a graphical image with a full bitmap version of the graphical image in accordance with an embodiment of the present invention. The system  
15 starts by displaying web page 105 within display 104 (step 202). Web page 105 includes line drawing version 106 of the graphical image. Note that displaying line drawing version 106 takes less time than displaying full bitmap version 108 because line drawing version 106 is more compact and takes less time to retrieve from server 120.

20 Next, the system allows a user of client 100 to input a command to display the full bitmap version 108 of the graphical image (step 204). In one embodiment of the present invention, the user inputs the command by moving a cursor over line drawing version 106 of the graphical image using a pointing device (such as a mouse), and then clicking a button associated with the pointing device.

25 Next, the system determines if the user inputted a command to display the full bitmap version 108 of the graphical image (step 206). If not, the system

allows the user to continue navigating through the pages in the graphical presentation (step 212). Note that the term “graphical presentation” is more general than the term “web site.” It encompasses a “web site” as well as any other mechanism that displays pages, windows or frames containing graphical images.

5           If the user inputted a command to display the full bitmap version 108 of the graphical image, the system retrieves the full bitmap version 108 (step 208), and then displays it (step 210). As mentioned above, this can involve displaying the full bitmap version 108 of the graphical image in place of line drawing version 106 within web page 105, or alternatively displaying the full bitmap version 108  
10       on its own separate page.

Next, the system allows the user to continue navigating through the pages in the graphical presentation (step 212).

#### **Process of Creating a Web Page**

15           FIG. 3 is a flow chart illustrating the process of creating a web page in which a line drawing version of a graphical image is selectively replaced with a full bitmap version of the graphical image in accordance with an embodiment of the present invention. The system starts by allowing a producer of a graphical presentation to select a full bitmap version 108 of a graphical image (step 302).  
20       Next, the system allows the producer to adjust the size of the graphical image, and to locate graphical image at a specific location within web page 105 (step 303).

The system then engages a software module to create a line drawing version 106 from the full bitmap version 108 of the graphical image (step 304). The system displays this line drawing version 106 and then asks the producer if  
25       the line drawing version 106 is acceptable (step 306). If the producer indicates that it is not acceptable, the system allows the producer to adjust parameters of the

software module to create a satisfactory line drawing version 106 of the graphical image (step 308). This adjustment process is repeated until line drawing version 106 is satisfactory.

When the producer indicates that line drawing version 106 is acceptable,  
5 the system asks the producer if the producer would like the full bitmap version 108 to appear within web page 105 or within a separate page (step 310). If the producer indicates that he or she would like the full bitmap version 108 to appear in a separate page, the system creates a separate page including the full bitmap version 108 by itself (step 314), and then links this separate page into the  
10 graphical presentation so that when the line drawing version 106 is selected, the separate page will be displayed.

Otherwise, if the producer indicates that he or she would like the full bitmap version 108 to appear within web page 105, the system links the full bitmap version 108 into the graphical presentation so that when the line drawing  
15 version 106 is selected, the full bitmap version 108 is written in place of the line drawing version 106 of the graphical image within web page 105 (step 312).

The foregoing descriptions of embodiments of the invention have been presented for purposes of illustration and description only. They are not intended to be exhaustive or to limit the present invention to the forms disclosed.  
20 Accordingly, many modifications and variations will be apparent to practitioners skilled in the art. Additionally, the above disclosure is not intended to limit the present invention. The scope of the present invention is defined by the appended claims.

**What Is Claimed Is:**

- 1           1.       A method for facilitating substitution of a full bitmap version of a  
2 graphical image with a line drawing version of the graphical image in a graphical  
3 presentation, the method comprising:  
4           displaying a page in the graphical presentation, the page including the line  
5 drawing version of the graphical image;  
6           wherein displaying the line drawing version of the graphical image  
7 requires less data to be retrieved than displaying the full bitmap version of  
8 graphical image;  
9           allowing a user to input a command to display the full bitmap version of  
10 the graphical image; and  
11           if the user inputs the command to display the full bitmap version of the  
12 graphical image,  
13                   retrieving the full bitmap version of the graphical image,  
14                   and  
15                   displaying the full bitmap version of the graphical image.
- 1           2.       The method of claim 1, wherein the graphical presentation is part  
2 of a web site and the page is a web page within the web site.
- 1           3.       The method of claim 1, wherein the user inputs the command to  
2 display the full bitmap version of the graphical image by using a pointing device  
3 to move a cursor over the line drawing version of the graphical image, and by  
4 depressing a button associated with the pointing device.

1           4.       The method of claim 1, wherein displaying the full bitmap version  
2 of the graphical image involves displaying the full bitmap version of the graphical  
3 image in another page that contains the full bitmap version of the graphical image  
4 alone.

1           5.       The method of claim 1, wherein displaying the full bitmap version  
2 of the graphical image involves displaying the full bitmap version of the graphical  
3 image in place of the line drawing version of the graphical image within the page  
4 in the graphical presentation.

1           6.       The method of claim 1, further comprising prior to displaying the  
2 page in the graphical presentation:  
3           producing the line drawing version of the graphical image from the full  
4 bitmap version of the graphical image;  
5           inserting the line drawing version of the graphical image into the page in  
6 the graphical presentation; and  
7           linking the full bitmap version of the graphical image into the graphical  
8 presentation so that selecting the line drawing version of the graphical image  
9 causes the full bitmap version of the graphical image to be displayed.

1           7.       The method of claim 1, wherein retrieving the full bitmap version  
2 of the graphical image includes retrieving the full bitmap version of the graphical  
3 image from a remote machine across a network.

1           8.       A computer-readable storage medium storing instructions that  
2 when executed by a computer cause the computer to perform a method for  
3 facilitating substitution of a full bitmap version of a graphical image with a line

4 drawing version of the graphical image in a graphical presentation, the method  
5 comprising:  
6 displaying a page in the graphical presentation, the page including the line  
7 drawing version of the graphical image;  
8 wherein displaying the line drawing version of the graphical image  
9 requires less data to be retrieved than displaying the full bitmap version of  
10 graphical image;  
11 allowing a user to input a command to display the full bitmap version of  
12 the graphical image; and  
13 if the user inputs the command to display the full bitmap version of the  
14 graphical image,  
15 retrieving the full bitmap version of the graphical image,  
16 and  
17 displaying the full bitmap version of the graphical image.

1 9. The computer-readable storage medium of claim 8, wherein the  
2 graphical presentation is part of a web site and the page is a web page within the  
3 web site.

1 10. The computer-readable storage medium of claim 8, wherein the  
2 user inputs the command to display the full bitmap version of the graphical image  
3 by using a pointing device to move a cursor over the line drawing version of the  
4 graphical image, and by depressing a button associated with the pointing device.

1 11. The computer-readable storage medium of claim 8, wherein  
2 displaying the full bitmap version of the graphical image involves displaying the

3 full bitmap version of the graphical image in another page that contains the full  
4 bitmap version of the graphical image alone.

1 12. The computer-readable storage medium of claim 8, wherein  
2 displaying the full bitmap version of the graphical image involves displaying the  
3 full bitmap version of the graphical image in place of the line drawing version of  
4 the graphical image within the page in the graphical presentation.

1 13. The computer-readable storage medium of claim 8, wherein prior  
2 to displaying the page in the graphical presentation, the method further comprises:  
3 producing the line drawing version of the graphical image from the full  
4 bitmap version of the graphical image;  
5 inserting the line drawing version of the graphical image into the page in  
6 the graphical presentation; and  
7 linking the full bitmap version of the graphical image into the graphical  
8 presentation so that selecting the line drawing version of the graphical image  
9 causes the full bitmap version of the graphical image to be displayed.

1 14. The computer-readable storage medium of claim 8, wherein  
2 retrieving the full bitmap version of the graphical image includes retrieving the  
3 full bitmap version of the graphical image from a remote machine across a  
4 network.

1 15. An apparatus that facilitates substitution of a full bitmap version of  
2 a graphical image with a line drawing version of the graphical image in a  
3 graphical presentation, the apparatus comprising:



4 a display mechanism that is configured to display a page in the graphical  
5 presentation, the page including the line drawing version of the graphical image;  
6 wherein displaying the line drawing version of the graphical image  
7 requires less data to be retrieved than displaying the full bitmap version of  
8 graphical image; and  
9 a command input mechanism that is configured to allow a user to input a  
10 command to display the full bitmap version of the graphical image;  
11 wherein if the user inputs the command to display the full bitmap version  
12 of the graphical image, the display mechanism is configured to,  
13 retrieve the full bitmap version of the graphical image, and  
14 to  
15 display the full bitmap version of the graphical image.

1 16. The apparatus of claim 15, wherein the graphical presentation is  
2 part of a web site and the page is a web page within the web site.

1 17. The apparatus of claim 15, wherein the user inputs the command to  
2 display the full bitmap version of the graphical image by using a pointing device  
3 to move a cursor over the line drawing version of the graphical image, and by  
4 depressing a button associated with the pointing device.

1 18. The apparatus of claim 15, wherein the display mechanism is  
2 configured to display the full bitmap version of the graphical image in another  
3 page that contains the full bitmap version of the graphical image alone.

1 19. The apparatus of claim 15, wherein the display mechanism is  
2 configured to display the full bitmap version of the graphical image in place of the

3 line drawing version of the graphical image within the page in the graphical  
4 presentation.

1 20. The apparatus of claim 15, further comprising a presentation  
2 preparation mechanism that is configured to:  
3 produce the line drawing version of the graphical image from the full  
4 bitmap version of the graphical image;  
5 insert the line drawing version of the graphical image into the page in the  
6 graphical presentation; and to  
7 link the full bitmap version of the graphical image into the graphical  
8 presentation so that selecting the line drawing version of the graphical image  
9 causes the full bitmap version of the graphical image to be displayed.

1 21. The apparatus of claim 15, wherein retrieving the full bitmap  
2 version of the graphical image includes retrieving the full bitmap version of the  
3 graphical image from a remote machine across a network.

1 22. A method for facilitating substitution of a full bitmap version of a  
2 graphical image with a line drawing version of the graphical image in a graphical  
3 presentation, the method comprising:  
4 receiving the full bitmap version of the graphical image;  
5 producing the line drawing version of the graphical image from the full  
6 bitmap version of the graphical image;  
7 wherein displaying the line drawing version of the graphical image  
8 requires less data to be retrieved than displaying the full bitmap version of  
9 graphical image;

10 inserting the line drawing version of the graphical image into a page in the  
11 graphical presentation; and  
12 linking the full bitmap version of the graphical image into the graphical  
13 presentation so that selecting the line drawing version of the graphical image  
14 causes the full bitmap version of the graphical image to be displayed.

1 23. The method of claim 22, wherein the graphical presentation is part  
2 of a web site and the page is a web page within the web site.

1 24. The method of claim 22, wherein linking the full bitmap version of  
2 the graphical image involves linking the full bitmap version of the graphical  
3 image so that selecting the line drawing version of the graphical image causes the  
4 full bitmap version of the graphical image to be displayed in another page that  
5 contains the full bitmap version of the graphical image alone.

1 25. The method of claim 22, wherein linking the full bitmap version of  
2 the graphical image involves linking the full bitmap version of the graphical  
3 image so that selecting the line drawing version of the graphical image causes the  
4 full bitmap version of the graphical image to be displayed in place of the line  
5 drawing version of the graphical image within the page in the graphical  
6 presentation.

1 26. The method of claim 22, wherein producing the line drawing  
2 version of the graphical image from the full bitmap version of the graphical image  
3 involves:  
4 displaying a candidate line drawing version of the graphical image to a  
5 producer of the graphical presentation; and

6 if the candidate line drawing version of the graphical image is not  
7 acceptable, allowing the producer of the graphical presentation to tune parameters  
8 used to generate the line drawing version of the graphical image.

1 27. The method of claim 22, wherein causing the full bitmap version  
2 of the graphical image to be displayed includes retrieving the full bitmap version  
3 of the graphical image from a remote machine across a network.

1 28. The method of claim 22, further comprising:  
2 displaying the page in the graphical presentation, the page including the  
3 line drawing version of the graphical image;  
4 allowing a viewer of the graphical presentation to input a command to  
5 display the full bitmap version of the graphical image; and  
6 if the viewer inputs the command to display the full bitmap version of the  
7 graphical image,  
8 retrieving the full bitmap version of the graphical image,  
9 and  
10 displaying the full bitmap version of the graphical image to  
11 the viewer.

1 29. The method of claim 22, further comprising allowing a producer of  
2 the graphical presentation to specify a location for the line drawing version of the  
3 graphical image within the page in the graphical presentation.

1 30. A computer-readable storage medium storing instructions that  
2 when executed by a computer cause the computer to perform a method for  
3 facilitating substitution of a full bitmap version of a graphical image with a line

4 drawing version of the graphical image in a graphical presentation, the method  
5 comprising:  
6 receiving the full bitmap version of the graphical image;  
7 producing the line drawing version of the graphical image from the full  
8 bitmap version of the graphical image;  
9 wherein displaying the line drawing version of the graphical image  
10 requires less data to be retrieved than displaying the full bitmap version of  
11 graphical image;  
12 inserting the line drawing version of the graphical image into a page in the  
13 graphical presentation; and  
14 linking the full bitmap version of the graphical image into the graphical  
15 presentation so that selecting the line drawing version of the graphical image  
16 causes the full bitmap version of the graphical image to be displayed.

1 31. The computer-readable storage medium of claim 30, wherein the  
2 graphical presentation is part of a web site and the page is a web page within the  
3 web site.

1 32. The computer-readable storage medium of claim 30, wherein  
2 linking the full bitmap version of the graphical image involves linking the full  
3 bitmap version of the graphical image so that selecting the line drawing version of  
4 the graphical image causes the full bitmap version of the graphical image to be  
5 displayed in another page that contains the full bitmap version of the graphical  
6 image alone.

1 33. The computer-readable storage medium of claim 30, wherein  
2 linking the full bitmap version of the graphical image involves linking the full

3 bitmap version of the graphical image so that selecting the line drawing version of  
4 the graphical image causes the full bitmap version of the graphical image to be  
5 displayed in place of the line drawing version of the graphical image within the  
6 page in the graphical presentation.

1 34. The computer-readable storage medium of claim 30, wherein  
2 producing the line drawing version of the graphical image from the full bitmap  
3 version of the graphical image involves:  
4 displaying a candidate line drawing version of the graphical image to a  
5 producer of the graphical presentation; and  
6 if the candidate line drawing version of the graphical image is not  
7 acceptable, allowing the producer of the graphical presentation to tune parameters  
8 used to generate the line drawing version of the graphical image.

1 35. The computer-readable storage medium of claim 30, wherein  
2 causing the full bitmap version of the graphical image to be displayed includes  
3 retrieving the full bitmap version of the graphical image from a remote machine  
4 across a network.

1 36. The computer-readable storage medium of claim 30, wherein the  
2 method further comprises:  
3 displaying the page in the graphical presentation, the page including the  
4 line drawing version of the graphical image;  
5 allowing a viewer of the graphical presentation to input a command to  
6 display the full bitmap version of the graphical image; and  
7 if the viewer inputs the command to display the full bitmap version of the  
8 graphical image,

1                   retrieving the full bitmap version of the graphical image,  
2                   and  
3                   displaying the full bitmap version of the graphical image to  
4                   the viewer.

1           37.    The computer-readable storage medium of claim 30, wherein the  
2    method further comprises allowing a producer of the graphical presentation to  
3    specify a location for the line drawing version of the graphical image within the  
4    page in the graphical presentation.

1           38.    An apparatus that facilitates substitution of a full bitmap version of  
2    a graphical image with a line drawing version of the graphical image in a  
3    graphical presentation, the apparatus comprising:  
4           a receiving mechanism that is configured to receive the full bitmap version  
5    of the graphical image;  
6           a line drawing producer that is configured to produce the line drawing  
7    version of the graphical image from the full bitmap version of the graphical  
8    image;  
9           wherein displaying the line drawing version of the graphical image  
10   requires less data to be retrieved than displaying the full bitmap version of  
11   graphical image;  
12          an insertion mechanism that is configured to insert the line drawing  
13   version of the graphical image into a page in the graphical presentation; and  
14          a linking mechanism that is configured to link the full bitmap version of  
15   the graphical image into the graphical presentation so that selecting the line  
16   drawing version of the graphical image causes the full bitmap version of the  
17   graphical image to be displayed.

1           39.     The apparatus of claim 38, wherein the graphical presentation is  
2     part of a web site and the page is a web page within the web site.

1           40.     The apparatus of claim 38, wherein the linking mechanism is  
2     configured to link the full bitmap version of the graphical image into the graphical  
3     presentation so that selecting the line drawing version of the graphical image  
4     causes the full bitmap version of the graphical image to be displayed in another  
5     page that contains the full bitmap version of the graphical image alone.

1           41.     The apparatus of claim 38, wherein the linking mechanism is  
2     configured to link the full bitmap version of the graphical image into the graphical  
3     presentation so that selecting the line drawing version of the graphical image  
4     causes the full bitmap version of the graphical image to be displayed in place of  
5     the line drawing version of the graphical image within the page in the graphical  
6     presentation.

1           42.     The apparatus of claim 38, wherein the line drawing producer is  
2     configured to:  
3                 display a candidate line drawing version of the graphical image to a  
4     producer of the graphical presentation; and to  
5                 allow the producer of the graphical presentation to tune parameters used to  
6     generate the line drawing version of the graphical image if the candidate line  
7     drawing version of the graphical image is not acceptable the producer.

1           43.     The apparatus of claim 38, wherein the linking mechanism is  
2     configured to cause the full bitmap version of the graphical image to be displayed



1 by retrieving the full bitmap version of the graphical image from a remote  
2 machine across a network.

1 44. The apparatus of claim 38, further comprising a display mechanism  
2 that is configured to:

3 display the page in the graphical presentation, the page including the line  
4 drawing version of the graphical image;

5 allow a viewer of the graphical presentation to input a command to display  
6 the full bitmap version of the graphical image; and

7 if the viewer inputs the command to display the full bitmap version of the  
8 graphical image, to

9 retrieve the full bitmap version of the graphical image, and

10 display the full bitmap version of the graphical image to the

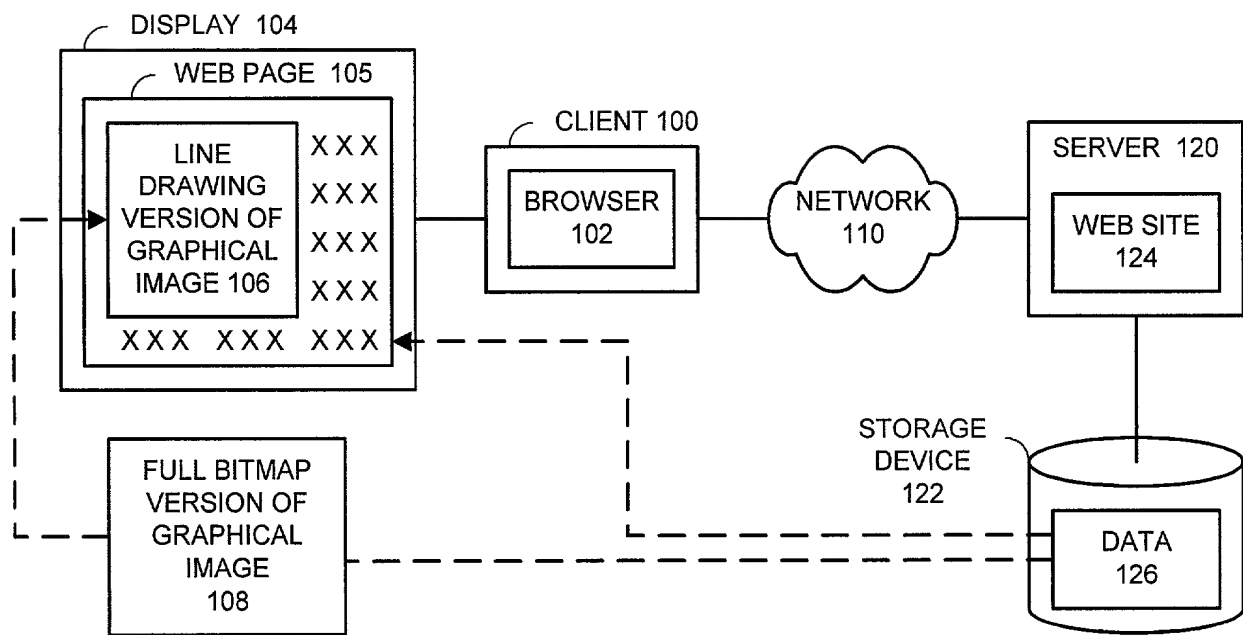
11 viewer.

1 45. The apparatus of claim 38, wherein the insertion mechanism is  
2 configured to allow a producer of the graphical presentation to specify a location  
3 for the line drawing version of the graphical image within the page in the  
4 graphical presentation.

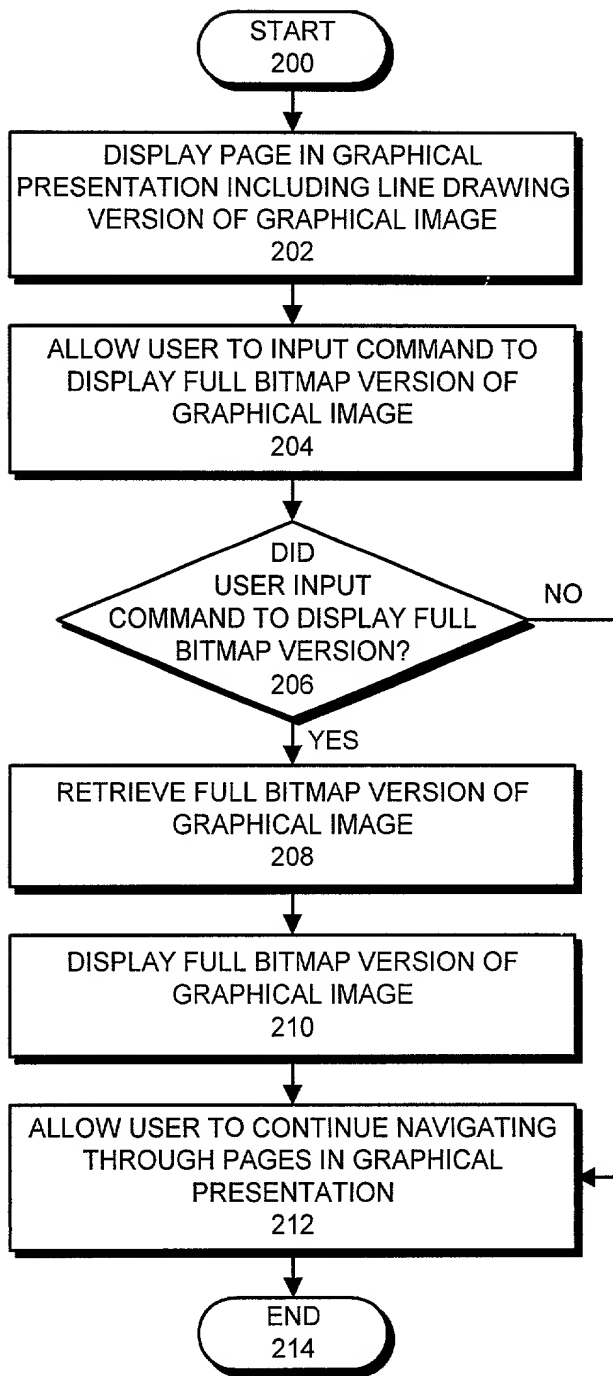
# METHOD AND APPARATUS FOR FACILITATING SUBSTITUTION OF DIGITAL IMAGES WITH LINE DRAWINGS

## ABSTRACT

One embodiment of the present invention provides a system that facilitates substitution of a full bitmap version of a graphical image with a line drawing version of the graphical image in a graphical presentation. The system operates by displaying a page in the graphical presentation, which includes the line drawing version of the graphical image. Next, the system allows a user to input a command to display the full bitmap version of the graphical image. If the user inputs the command, the system retrieves the full bitmap version of the graphical image, and displays the full bitmap version of the graphical image. Note that displaying the line drawing version of the graphical image requires less data to be retrieved than displaying the full bitmap version of graphical image. Consequently, loading the line drawing version of the graphical image takes less time than loading the full bitmap version. Another embodiment of the present invention provides a system that facilitates substitution of a full bitmap version of a graphical image with a line drawing version of the graphical image in a graphical presentation. The system receives the full bitmap version of the graphical image, and then produces the line drawing version of the graphical image from the full bitmap version of the graphical image. Next, the system inserts the line drawing version of the graphical image into a page in the graphical presentation, and then links the full bitmap version of the graphical image into the graphical presentation so that selecting the line drawing version of the graphical image causes the full bitmap version of the graphical image to be displayed.



**FIG. 1**



**FIG. 2**

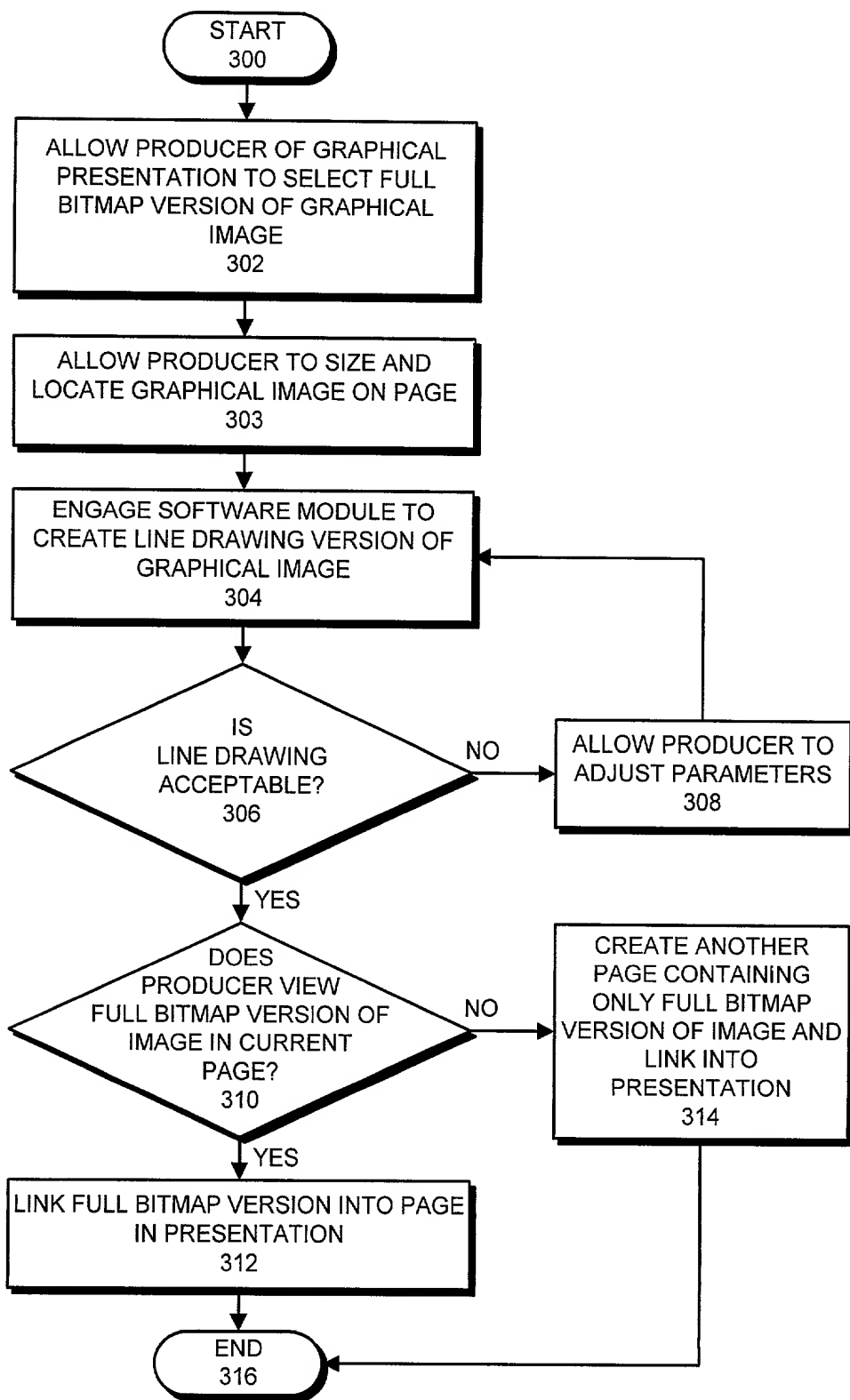


FIG. 3

**COMBINED DECLARATION AND POWER OF ATTORNEY**

As a below-named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below by my name;

I believe I am the original, first and sole inventor, if only one name is listed below, or an original, first and joint inventor if multiple names are listed below, of the subject matter which is claimed and for which a patent is sought on the invention entitled:

**METHOD AND APPARATUS FOR FACILITATING SUBSTITUTION OF DIGITAL IMAGES WITH LINE DRAWINGS**

for which a patent application:

☒ is attached hereto.

☐ was filed in the United States on \_\_\_\_\_ as Application No. \_\_\_\_\_;

☐ with amendment(s) filed on \_\_\_\_\_ (if applicable).

I hereby state that I have reviewed and understand the contents of the application identified above, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information known to me to be material to the examination of this application in accordance with Title 37, Code of Federal Regulations, §1.56, which states in relevant part:

Each individual associated with the filing and prosecution of a patent application has a duty of candor and good faith in dealing with the Office, which includes a duty to disclose to the Office all information known to that individual to be material to patentability as defined in this section.... The duty to disclose all information known to be material to patentability is deemed to be satisfied if all information known to be material to patentability of any claim issued in a patent was cited by the Office or submitted to the Office....

I hereby claim foreign priority benefits under Title 35, United States Code, §119(a)-(d), of any foreign application(s) for patent or inventor's certificate as indicated below and have also identified below any foreign application for patent or inventor's certificate on this invention having a filing date before that of the application on which priority is claimed:

EARLIEST FOREIGN APPLICATION(S), IF ANY, FILED PRIOR TO THE FILING DATE OF THE APPLICATION			
APPLICATION NUMBER	COUNTRY	DATE OF FILING (Day, Month, Year)	PRIORITY CLAIMED
			YES <input type="checkbox"/> NO <input type="checkbox"/>

I hereby claim the benefit under Title 35, United States Code, §119(e), of any United States provisional application(s) listed below:

APPLICATION NUMBER	DATE OF FILING

I hereby claim the benefit under Title 35, United States Code, §120, of any United States application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code, §112, I acknowledge the duty to disclose information that is material to patentability as defined in Title 37, Code of Federal Regulations, §1.56, which became available between the filing date of the prior application and the national or PCT international filing date of this application:

APPLICATION NUMBER	DATE OF FILING	STATUS		
		PATENTED	PENDING	ABANDONED

I hereby appoint Paul A. Revis (Reg. No. 45,040), Hoyt A.

Fleming III (Reg. No. 41,752), Daniel E. Vaughan (Reg. No.

42,199) and A. Richard Park (Reg. No. 41,241) to prosecute this application and transact all business in the Patent and Trademark Office connected therewith, and to file, prosecute and transact all business in connection with international applications directed to said invention.

Address correspondence to:  
**Park & Vaughan LLP**  
**508 Second Street, Suite 201**  
**Davis, CA 95616**



**22835**

Direct telephone calls to:  
A. Richard Park  
(530) 759-1661

PATENT TRADEMARK OFFICE

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Title 18, United States Code, §1001, and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

1	Name and Citizenship	Paul A. Revis	United States of America
	Residence Address	2020 E. Summerridge Drive, Meridian, ID 83642	
	Postal Address (if different from Residence)		
	Signature and Date	<i>Paul A. Revis</i>	Date 4/10/0
2	Name and Citizenship		
	Residence Address		
	Postal Address (if different from Residence)		
	Signature and Date		Date
3	Name and Citizenship		
	Residence Address		
	Postal Address (if different from Residence)		
	Signature and Date		Date
4	Name and Citizenship		
	Residence Address		
	Postal Address (if different from Residence)		
	Signature and Date		Date
5	Name and Citizenship		
	Residence Address		
	Postal Address (if different from Residence)		
	Signature and Date		Date

Additional inventor name(s) and signature(s) attached?: YES ☐ NO ☒

**POWER OF ATTORNEY BY ASSIGNEE TO EXCLUSION OF INVENTOR UNDER  
37 C.F.R. § 3.71 WITH REVOCATION OF PRIOR POWERS**

Inventor(s): Paul A. Revis  
Title: METHOD AND APPARATUS FOR FACILITATING SUBSTITUTION OF  
DIGITAL IMAGES WITH LINE DRAWINGS  
Docket No: M00-031500  
Serial No. To Be Assigned  
Filing Date: To Be Assigned  
Group Art Unit: To Be Assigned  
Examiner: To Be Assigned

The undersigned ASSIGNEE of the entire interest in the above-identified application for letters patent hereby appoints A. Richard Park, Registration No. 41,241 and Daniel E. Vaughan, Registration No. 42,199 of PARK & VAUGHAN LLP, to prosecute this application and transact all business in the United States and Trademark Office in connection therewith and hereby revokes all prior powers of attorney; said appointment to be to the exclusion of the inventors and the inventors' attorneys in accordance with the provisions of 37 C.F.R. § 3.71.

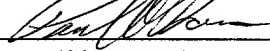
The following evidentiary documents establish a chain of title from the original owner to the Assignee:

  X   a copy of an Assignment attached hereto, which Assignment has been (or is herewith) forwarded to the Patent and Trademark Office for recording; or  
       the Assignment recorded on \_\_\_\_\_ at reel \_\_\_\_\_, frames \_\_\_\_\_ - \_\_\_\_\_.

Pursuant to 37 C.F.R. § 3.73(b) the undersigned Assignee hereby states that evidentiary documents have been reviewed and hereby certifies that, to the best of ASSIGNEE's knowledge and belief, title is in the identified ASSIGNEE.

Please direct all telephone calls and correspondence to: A. Richard Park, Park & Vaughan LLP, 508 Second Street, Suite 201, Davis, CA 95616, tel: (530) 759-1661.

**ASSIGNEE:** Micron Electronics, Inc.

Signature:  4/10/0  
(Signature) (Date)

Name: Paul A. Revis

Title: Intellectual Property Counsel